The Evolutionary Psychology of Extrapair Sex: The Role of Fluctuating Asymmetry
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Introduction:
- Male suspicion of extrapair copulations (EPC) are the most common cause of spousal homicide.
- Large surveys of married women in the U.S. estimate that between 15% and 70% (two different studies) have had extramarital sex
    - Median estimate about 30%
- Typically 25-50% of married US men surveyed report having had extramarital sex
- 6% of a sample of British women with one main partner reported their last copulation to be an EPC
- Blood paternity studies in England revealed about 6% of purported biological fathers were not the father
- This research adopts an evolutionary perspective
- Will explore individual difference factors associated with EPCs of college students in romantic relationships
- College romantic relationships are convenient to study
- EPC factors in college romantic relationships are expected to be similar to long term mateships
    - EPCs in college relationships can bring about many of the same consequences as in marriages

Evolutionary Psychology and EPCs
- Long term sexual/ romantic relationships represent the expression of adaptations
- Purportedly, such relationships provide social context for efficient and successful child rearing
- In this age, long term sexual relationships can be completely unlinked from reproduction and parenting
    - This does not contradict the historically adaptive, reproductive significance of the psychology that underlies forming and maintaining sexual relationships
- From adaptationist perspective, EPCs occur because men and women play different roles in reproduction
    - Men can have many offspring
        - EPC increase quantity
        - Reproductive success correlate with number of mates/ short-term mating
        - Seek long term mating under certain conditions
    - Women can have about one offspring a year
        - EPC likely increases quality
- EPCs are short term mating that require relatively small effort
- *Focus is on one sexual selection process, "good genes" sexual selection

"Good Genes"

- Theorists propose that women will accept men for short term mating if their genes contribute to the fitness of their offspring (have "good genes")
    - Controversial because classic population genetic models drive out heritable fitness
    - Those models are based on assumptions
        - Selective environment is constant (certain aspects are definitely not)
        - New genetic variants enter the population at a negligible rate (mutations are not selected out)
- Fluctuating asymmetry is absolute asymmetry of two sides of bilateral characters (wings, hands, feet, ears) where the signed difference between the sides have population mean of zero and are normally distributed
    - Both sides are controlled by the same genes so maybe their asymmetry represents some developmental perturbation (instability)
- Fluctuating asymmetry appears to be heritable across species including humans
- Low fluctuating asymmetry is associated with high male mating success in a variety of species
- They created a composite index by measuring fluctuating asymmetry
- Men with low fluctuating asymmetry were judges as more attractive
    - Tend to have relatively large body mass
    - Tend to have relatively many sexual partners
- **Hypothesis: Men's number of EPC partners will correlate positively with men's developmental quality and thus negatively correlate with men's fluctuating asymmetry**

Factors Affecting Women's EPC Partnerships
- One benefit of EPCs for women is based on the notion of "good genes" sexual selection
- Women may have been able to obtain both investment and genetic benefits by having offspring with the man with "good genes" and having the investment from another man
- One evolutionary view suggests women's propensity to engage in EPC should depend on this factor

Hypothesis: Women's EPC partners will tend to have low fluctuating asymmetry and thus men's fluctuating asymmetry should negatively correlate with the number of times they have been a woman's EPC partner

Overview:
- Heterosexual college students in romantic relationships
- Series of questionnaires
    - Number of EPC partners:
        - Whether they have ever had sex with a person of the opposite sex other than a relationship partner during a romantic relationship and if so, how many
    - Number of times an EPC partner:
        - Whether they have ever had sex with someone of the opposite sex they knew was involved romantically with another person at that time and if so, with how many such persons

- 7 anatomical fluctuating asymmetries (FA) measured for index
- Regression analyses conducted to examine association between men's and women's fluctuating asymmetry and number of EPC partners or times and EPC partner
- Included measures of ag, socioeconomic status (SES) of family of origin, expected future salary, physical attractiveness, and attachment style
- Measure designed to categorize individuals into one of three styles based on work with mother-infant interactions (avoidant, anxious, secure)
- Included measures of attachment style because variations in openness to intimacy and fear of abandonment predict a variety of relationship phenomena
    - It would be important to control for attachment styles
- Associations between attachment styles and EPC may be interesting
- Used Simpson et al. 's measures of two dimensions of avoidant and anxious attachment

Methods:
Participants
- 203 heterosexual couples (203 men, 203 women) in relationships for at least 1 month
- At least one member of each couple enrolled in psychology course
- Received participation credit
- Raffle drawing at the end of two semesters to further incentivize
- 100 dollar raffle prize
- Mean age men 21.06 (SD= 3.34, range 17-40)
    - Women 19.95 (SD= 3.24, range 17-39)
- 53% caucasian
- 36% hispanic
- 5% native american
- 3% African American
- 1% asian
- 2% other
- 20 married
- 9 with children
- 6 men and 8 women had children with previous partners
- Mean relationship length at time 20.6 months (SD = 18.6, range 1-108)
Procedure
- Couples reported in groups of 1-4
- Each individual escorted to separate room to fill out questionnaires
Questionnaires
1) Basic information sheet: age, height, weight, ethnicity, SES of home of origin (upper, upper-middle, lower, middle class), marital status, duration of current relationship, number of offspring, number of offspring with current partner, ever broken or sprained within the past 3 months

(ankle, foot, hand, or wrist as that would be taken into account when measuring fluctuating asymmetry)

2) Extrapair Sex, current relationship: whether they have had sex with someone other than their current partner during the relationship, if so how many

3) Extrapair sex, ever: asked if they had EPC with any prior partner and if so how many

- Men reported 1.62 EPC (SD = 2.67, range 0-16)
- Women reported 0.5 EPC (SD = .99, range 0-7)

4) Number of times an EPC partner: Whether they had had sex with someone they knew was seriously involved in a relationship or married

   - Men reported having been an EPC partner with 0.76 partners (SD = 1.99, range = 0-13)
   - Women reported 0.33 partners (SD = 1.66, range = 0-3)
   - Only participants in the latter half were asked these questions (n=99)

5) Self and Partner Estimated earnings: Asked to estimate yearly earnings they and their partner would achieve in 10 years (Median male self report 55k, partner report 50k, female self report 40k, partner report 50k)

6) Attachment Indices: two factor analytically derived scales measuring attachment types
- Anxious attachment and avoidant attachment

Fluctuating asymmetry measures
- experimenters interrupted participants to measure foot width, ankle width, hand width, wrist width, elbow width ear length, and ear width
- Measurements made with steel calipers to the nearest 0.1 mm
- Measured twice to control for error and averaged when they differed by more than 3mm (10% of measurements)
- 99 participants from second half had second and fifth finger length measured
- FA calculated for each participant by taking absolute difference between the two sides, divided by mean character size
- Since second semester recorded more information, data was standardized (through z-score transformation) within semester
- Some asymmetry due to breaks or sprains, so for every break or sprain they:
   - Assigned sex specific mean when the asymmetry exceeded the mean
   - Assigned the asymmetry when the asymmetry was lower than the mean
   - Affected 4.1 % of FA calculations (men 5.9% women 2.4%)
- Authors measured 25% of participants
- About 50% of participants were measured by experimenters
- Any result could be due to bias

Photographs and Physical attractiveness ratings:
- After measuring, an experimenter took 2 black and white, head-on facial shots
- Asked to retain neutral expression
- The clearer, more neutral photo was chosen

- First semester 10 raters rated the photos for attractiveness
- 2nd semester 8 raters rated photos for attractiveness
    - Scale of 1-10, 1 being least attractive
- Did not obtain pictures for 14 men and 13 women due to camera mishaps or unsuitable pictures

Results:

Number of EPC Partners
- First model included 5 variables
    - Age, FA, expected salary, SES, physical attractiveness
- On variable significantly predicted men's number of EPC partners: FA (beta = -1.7, t[168] = 2.22, p<.02)
    - Low FA men reported having more EPC partners than high FA men
- No variable significantly predicted women's partners, |t|s<1.4
- Second set of regressions analyses added attachment style variables
- Women's number of EPC partners was significantly predicted by both attachment variables.
    - Anxious attachment positively predicted their number of EPC partners beta=.20, t(161) = 2.60, p<.01
    - Avoidant attachment negatively predicted number of EPC partners, beta = -.21, t(161) = 2.69, p <.01

Number of times an EPC partner
- 5 variable regression
    - FA, age, expected salary, SES, physical attractiveness
- Men: significantly predicted by 3 variables
    - Lower FA tended to have been an EPC partner more often than higher FA beta=-.27,t(80) = 2.67, p<.005
    - Older men were EPC partners more often than younger men beta = .24, t(80) = 2.30, p<.05
    - Facially attractive men had been an EPC partner more often beta = .27, t(80) = 2.52, p<.02
- Number of times women had been EPC partners predicted only by age beta = .66,t(72) = 7.14, p< .001
- Anxious and avoidant attachment did not significantly predict being an EPC partner for men or women

Controlling for number of sex partners
- Independent of men's number of partners other than EPC partners, men's FA continued to significantly predict their number of EPC partners, beta = -.13, t(159) = 1.83, p< .05
- FA significantly predicted the number of times he had been an EPC partner independent of number of sex partners, beta = -.24, t(73) = 2.49, p< .01
- Men's physical attractiveness predicted the number of times they had been an EPC partner marginally significantly, beta = .17, t(73) = 1.73 p<.09

- Independent of women's number of sex partners other than EPC partners, avoidant and anxious attachment continued to significantly predict their number of EPC partners, betas =-.21 and .19, respectively t(159) = -2.72, p< .01 and 2.45, p<.05
- Number of EPC partners an individual reported was predicted by number of non-EPC partners reported, same with having been a partner

Zero-order correlations
- No significant correlation between face attractiveness and FA

Discussion:
- Both hypotheses supported
- Low FA men have more EPC partners
    - Potential confounding variable of age, SES of family of origin, expected future salary, physical attractiveness, and attachment style were statistically controlled.
- Low FA men claimed to have been partners more often than high
    - Potential confounding variable of age, SES of family of origin, expected future salary, physical attractiveness, and attachment style were statistically controlled.
- Men's facial attractiveness predicted how many times they had been an EPC partner, but their number of EPC partners
- Attachment style predicted women's number of EPC partners

Implications for sexual selection theory applied to humans
EPCs and men's FA
- Low FA men tend to sexualize (e.g. flirt with) women who are not their partner than high FA men
- Consistent with notion that "good genes" sexual selection has something to do with the design of human psychological adaptations that have underlie mating
- Women have higher sperm retention orgasms with EPC partners

Men's material resources
- Found no support that wealth affects men's being an EPC partner or having EPC partners
- Predictions about men's material resources would make more sense on a different population

Women's FA
- Women's FA did not predict their own EPC or number of times they had been an EPC partner

Women's attachment Styles and Sexual History
- It appears that women most likely to engage in EPCs are open to intimacy (non avoidant) yet fearful of abandonment (anxious)